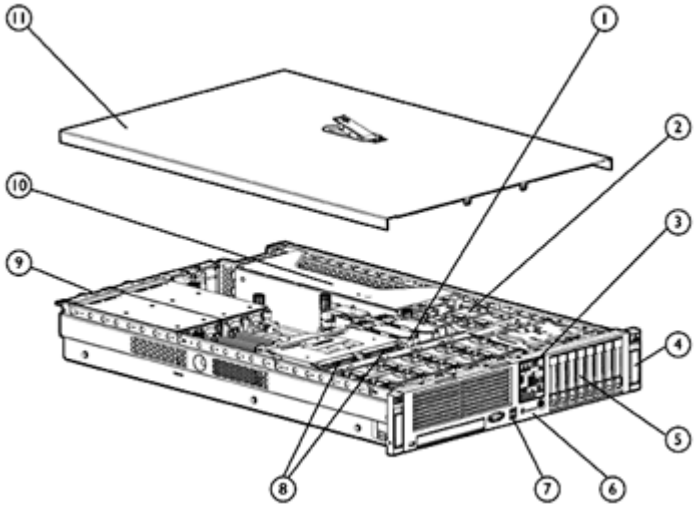
Overview

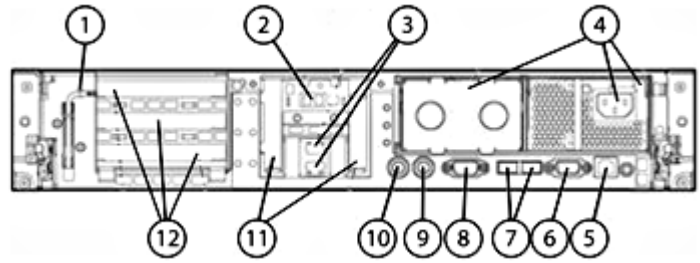
You have better things to do than worry about file storage. You're juggling multiple management interfaces, security concerns, and shrinking backup windows--all while your users continue to demand more and more space for their data. You need to add file storage that's powerful and easy to manage, and you need to do it fast.

A DL380 G5 Storage Server is a fast and easy way to add file storage to your network. Its Microsoft Windows-powered operating system is pre-installed and internal storage is pre-configured, so you're up and serving files in minutes. It supports multiple file sharing protocols, so you can consolidate and make a single centralized platform to manage and protect, or you can create a scalable disk-based backup/replication target. And if you have a Fibre Channel SAN, you can use the x64 SAN model and its built-in iSCSI software target to create file access and tiered block storage for application servers.

Once your solution is installed, you'll find that you spend less time and effort on file management and maintenance. You can manage and troubleshoot from almost anywhere with either remote desktop or Integrated Lights-out 2. Since it's running Windows, it integrates seamlessly into your Active Directory and DFS environments, runs your favorite antivirus or backup applications, and has a familiar management look and feel. And don't forget that it's a print server, too.

All DL380 G5 Storage Servers are built on industry standards and include features that protect and optimize your investment. The high-performance 2U rack mount platform delivers the flexibility you need with six scalable appliance models plus the file/iSCSI SAN gateway that features Microsoft's unified storage operating system. All models offer intelligent storage-specific tools and features like Indexed Search and Single-instance Storage (SIS), which de-duplicates file storage and helps save disk space.





Front View:

1. Eight sockets for PC2-5300 Fully Buffered DIMMs (DDR2-667)
2. Hot-plug fans, full redundancy
3. Systems Insight Display
4. Quick release lever for rapid server access

Front View:

1. Torx service tool
2. Optional pass through cable door
3. Two Embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine

Overview

5. Support for up to eight internal Small Form Factor hot plug hard drives
6. Front LEDs (show server status) and Unit Identification button/LED (for easy in rack server identification)
7. Two front USB ports (2 rear USB ports, 1 internal USB port)
8. Quad-Core Intel Xeon Processor(s)
9. Redundant hot plug power supplies
10. Three full-size PCIe expansion slots in standard expansion cage. Two additional low-profile PCIe slots embedded on the system board. Four slots available for use; one consumed by Smart Array controller.
11. Quick removal access panel

4. Hot plug power supply bays with redundant power supply
5. Integrated Lights-Out 2 (iLO 2) Remote management port
6. Video Port
7. Two USB 2.0 Ports
8. Serial Port
9. Keyboard Port
10. Mouse PS/2 Port
11. Two low-profile PCI Express x8 slots. Slot 1 is consumed by Smart Array P400 controller (x64 SAN model only)
12. Three full-size PCI Express slots in standard cage. One slot is consumed by Smart Array P800 controller (all models except x64 SAN model)

What is a ProLiant Storage Server?

ProLiant Storage Servers are enhanced Windows-powered file and print server solutions for small or medium business, branch office, workgroup, or data center IT environments. These network storage devices are built on industry-standard HP ProLiant servers and come with either Microsoft Windows Storage Server 2003 R2 or Windows Unified Data Storage Server 2003 operating system pre-installed. Like many Network Attached Storage (NAS) devices, they support heterogeneous file serving environments and are pre-configured to install in minutes. And since they're Windows-based, network integration is easy, your antivirus and backup applications run right on the box, and management has a familiar look and feel. So you can add storage to your network quickly and spend less time on storage management, then get back to what matters most: running your business.

What's New

DL380 G5 Storage Server models featuring:

- Microsoft Windows Storage Server 2003 R2 Standard x64 Edition operating system
- Quad-core processor and 2GB SDRAM standard
- PCIe expansion only
- Smart Array P800/512MB controller ready for easy external expansion with MSA enclosures
- MSA60 bundles with high-capacity SATA or SAS drives

Overview

Highlights

ProLiant DL380 G5 Storage Servers deliver Enterprise-level performance, scalability and flexibility. Up to two quad-core processors, expandability to multiple terabytes of storage via external arrays, and a powerful new SAN gateway option make it the network storage solution of choice for SMB, workgroup, and small Enterprise environments.

- Operating System:
  - Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition (all models except x64 SAN model)
  - Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition (x64 SAN model)
- Processor:
  - Quad-Core Intel® Xeon® E5345 2.33 GHz
  - Single processor (all models except x64 SAN model); two processors (x64 SAN model)
- Memory:
  - 2GB (2 x 1GB) standard (all models except x64 SAN model)
  - 4GB (2 x 2GB) standard (x64 SAN model)
- Storage Controller:
  - Smart Array P800/512MB Controller (RAID 0/1/5/6) with BBWC and external expansion (all models except x64 SAN model)
  - Smart Array P400/512MB Controller (RAID 0/1/5/6) with BBWC (x64 SAN model)
- Drive Support:
  - Eight small form factor (SFF) hot-plug internal bays that support SAS or SATA HDDs
    - Two SAS SFF HDDs for mirrored OS (all models except 1.16TB SAS model)
    - 8 x 146GB SAS SFF (1.16TB SAS model)
  - External SAS or SATA HDD support via bundled HP StorageWorks 60 Modular Smart Array enclosures
    - 6 x 750GB SATA LFF (4.5TB SATA model)
    - 12 x 750GB SATA LFF (9TB SATA model)
    - 6 x 300GB SAS LFF (1.8TB SAS model)
    - 12 x 300GB SAS LFF (3.6TB SAS model)
  - Slimline DVD+R/RW 8X drive to support System Restore
- Network Controller:
  - Dual embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine
- Expansion Slots:
  - Two embedded half-height low profile x4 PCIe slots (one slot occupied by Smart Array P400/512MB controller on x64 SAN model)
  - PCIe Riser: one x4 PCIe slot and two x8 PCIe slots (one slot occupied by Smart Array P800/512MB controller on all models except x64 SAN model)
- Redundancy:
  - Hot-plug SAS/SATA hard disk drives
  - Hot plug redundant power supplies
  - Fully redundant hot plug fans (N+1)
- Management:
  - Microsoft Management Console (MMC)-based user interface
  - Remote system management via Remote Desktop or Telnet
  - Remote hardware management via Integrated Lights Out 2 (iLO 2) - Advanced License included
- Form Factor:
  - Rack (2U), (3.5-inch); Depth 26 inches (66 cm)
- Warranty:
  - Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty (three years parts, three years labor, and three years on-site support). Certain restrictions and exclusions apply. SATA hard drives have a one-year warranty.

Overview

The fast and easy way to add a file server to your network	The Windows-powered operating system is pre-installed and user storage is pre-configured, so it's a quick, secure, and easy way to add storage to your network or to add intelligent file and iSCSI services to your Fibre-Channel SAN. Go from out-of-the-box to file serving in minutes, not hours.
A single centralized file server platform to manage and protect	Consolidate islands of direct-attached storage to one easy-to-use Windows platform or create a scalable disk-based backup or replication target.
Multi-protocol file serving	You can deploy in wide range of heterogeneous file serving environments with support for SMB/CIFS, NFS, HTTP, FTP, WebDAV, AppleTalk, and NetWare file protocols.
Add file access to your SAN or tier SAN block access	The x64 SAN Storage Server model is a file and iSCSI gateway into a Fibre Channel SAN, providing IP-based access to virtually unlimited storage. In addition to enabling FC-SAN file storage, it can help tier storage for application servers by creating block access via inexpensive Ethernet infrastructure.
Microsoft® Windows-powered operating system pre-installed	It's Windows! So it integrates seamlessly into your Active Directory and DFS environments, runs your favorite antivirus or backup applications, and if you've used Microsoft Management Console (MMC) before, there's no steep learning curve to worry about because you're already familiar with the user interface.
Intelligent storage management features	Make more efficient use of storage space using the file de-duplicating Single-instance Storage (SIS) feature and enjoy the benefits of other storage-specific tools like Indexed search, SharePoint® Services support, Quotas, File Screening, Storage Reporting, and Distributed File System (DFS) Replication.
Remote manageability	You can manage and troubleshoot from almost anywhere at both the system level (with Remote Desktop or HTTPS) and at the hardware component level (using Integrated Lights-out 2).
HP ProLiant industry-standard hardware	Relax--your investment is protected because you're not locked into proprietary hardware. The high-performance 2U rack mount platform supports up to 2 quad-core processors, up to 8 internal SFF drives, easy external expansion, and redundant power and cooling.
Print server support	Don't forget that it's a Windows print server, too; the print management console is integrated into the core functionality of the operating system and it allows you to manage multiple printers from a single interface.
Microsoft® iSCSI Software Target support	Lower your total cost of ownership even more by hosting application (block) storage on your storage server. The x64 SAN model features the Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S (which includes iSCSI software target), while other models can be upgraded with optional software (T4433A).

Operating System

Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models

Microsoft Windows Storage Server 2003 R2, Standard x64 Edition

- 64-bit processing (compatible with 32-bit applications)
- Optimized for File Serving: Up to 20% faster file serving performance than a general-purpose Windows Server 2003 R2 installation on the same hardware.
- HP-enhanced File Server Management Console: Features the familiar look and feel of the Microsoft Management Console (MMC).
- HP Rapid Start-up Wizard: Simplifies and accelerates new device deployment by walking you through basic system settings step-by-step.
- Single-instance Storage (SIS): Recovers up to 35% of disk space by de-duplicating files and reducing the amount of redundant data stored. Identifies identical files, stores a single copy of the file in a central repository, and replaces the files with pointers to the file in the SIS common store.
- Search Enhancements: Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access that information through the Search function for computers running Windows 2000 or Windows XP.
- File Server Resource Manager (FSRM): Provides both on-demand and scheduled reports detailing storage use, allows administrators to create and manage folder and volume quotas, and permits both name-based screening of files and allowing/disallowing file creation on specified folder trees.
- Windows SharePoint® Services: A powerful Web-based team collaboration environment that provides an integrated portfolio of collaboration and communication services designed to connect people, information, processes, and systems.
- Distributed File System (DFS) Management Console: Updated DFS namespace failover, failback and prioritization controls.
- Distributed File System Replication (DFS-R): State-based, multi-master replication engine that supports replication scheduling and bandwidth throttling. DFS-R uses a new compression algorithm that efficiently updates files over limited bandwidth networks by replicating only the changes needed to ensure global file consistency.
- Full support of Volume Shadow Copy Service, which creates point-in-time copies of files and folders at predetermined time intervals that can then be accessed from client computers.
- Unlimited Client Access Licenses (CALs) included
- Microsoft Services for Network File System (NFS)
- Support for multiple file serving protocols, including SMB/CIFS, NFS, HTTP, FTP, WebDAV, AppleTalk, and NetWare
- Print Management Console: Manage multiple printers (license for unlimited printer support) from a single console, whether locally or over the WAN.
- Support for any number of SATA or SAS drives and multiple network ports

x64 SAN model

Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition

Includes all Windows Storage Server 2003 R2, Standard x64 Edition features plus:

- Microsoft Windows iSCSI Software Target: Adds block storage capability and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. New wizards give you the ability to easily create and manage iSCSI targets, create and manage disks for storage, and implement backup and recovery support using snapshots.
- Microsoft Cluster Server (MSCS) license included
  - NOTE: The DL380 G5 x64 SAN Storage Server may only be clustered with servers also running Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition operating system (HP recommends like hardware as well). Microsoft Windows Unified Data

Storage Server 2003, Enterprise x64 Edition can not be clustered with ProLiant Storage Servers based on 32-bit (Windows Storage Server 2003 R2 or older) operating systems

- Storage Manager for SANs (SMfS): Natively provides basic SAN management (such as device discovery, LUN creation, and storage allocation) for SAN gateway installations. Moreover, SMfS enables shared storage solutions and clustering.
- Unified Share and Storage Management Snap-in: With a consistent and familiar interface, simplifies management of shares and volumes by unifying SMB and NFS share provisioning, integrating share and storage provisioning, and providing an overview of storage and shares.
- Remote Administration Enhancements: Key new functionality enables Windows Storage Server to be used and managed in environments that are not predominantly Windows-based.

For more information about this OS see:
http://www.microsoft.com/windowsserversystem/storage/wudss.mspx

Processors

Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models

1 x Quad-Core Intel® Xeon® Processor E5345 (2.33 GHz, 80 Watts, 1333 FSB)

x64 SAN model

2 x Quad-Core Intel® Xeon® Processors E5345 (2.33 GHz, 80 Watts, 1333 FSB)

Cache Memory

8 MB (2 x 4 MB) Level 2

Chipset

Intel® 5000P Chipset

NOTE: For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.

Memory

Type	PC2-5300 Fully Buffered DIMMs (DDR2-667) with 4:1 and 2:1 interleaving available (interleaving requires identical DIMMs)
Memory Protection	Advanced ECC (multi-bit error protection), Online Spare, Mirroring, 4-way Interleaving
DIMM Sockets	8
Maximum configuration	32 GB (8 x 4GB)
Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models	
Standard	2 GB (2 x 1GB)
x64 SAN model	
Standard	4 GB (2 x 2GB)

Network Controller

Dual Embedded NC373i Multifunction Gigabit NICs with TCP/IP Offload Engine

NOTE: Supports the included Microsoft Windows Server 2003 Scalable Networking Pack, which includes TCP Chimney Offload, Receive-side Scaling (RSS), and NetDMA features

NOTE: Also supports RDMA through optional ProLiant Essentials Licensing Kits

Standard Features

Expansion Slots

Embedded Slots

Slot Number	Bus Speed*	Bus Number**	Device Number***	Hot Plug	PCI Voltage
1	x4 PCIe (x8 connector)	6	0	no	N/A
2	x4 PCIe (x8 connector)	11	0	no	N/A

NOTE: One slot occupied by integrated Smart Array P400/512MB controller (x64 SAN model only).
NOTE: Embedded slots support half-height low profile cards.

PCIe Riser

Slot Number	Bus Speed*	Bus Number**	Device Number***	Hot Plug	PCI Voltage
3	x4 PCIe (x8 connector)	14	0	no	N/A
4	x8 PCIe (x16 connector)	23	0	no	N/A
5	x8 PCIe (x16 connector)	19	0	no	N/A

NOTE: One slot occupied by integrated Smart Array P800/512MB controller (Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models).
NOTE: Riser slots support full-size PCIe cards.

Storage Controller

Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models

HP Smart Array P800/512MB Controller with battery-backed write cache (BBWC)

- RAID 0/1/1+0/5 and RAID 6 with Advanced Data Guarding
- x8 2.5G PCIe host interface
- External expansion ports

x64 SAN model

HP Smart Array P400/512MB Controller with battery-backed write cache (BBWC)

- RAID 0/1/1+0/5 and RAID 6 with Advanced Data Guarding
- x8 2.5G PCIe host interface

Fibre Channel SAN connectivity for all models requires a Host Bus Adapter (must be purchased separately). Please see 'SAN Compatibility' for more information.

Standard Features

Storage	Hard Drives	Internal: • 2 x 36GB 3G SAS 15K SFF HDDs for mirrored OS (Base, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models) • 2 x 36GB or 2 x 72GB 3G SAS 10K SFF HDDs for mirrored OS (x64 SAN model) • 8 x 146GB 3G SAS 10K SFF HDDs (1.16TB SAS model) External: • 6 x 750GB SATA 7.2K LFF HDDs installed in external MSA60 array enclosure (4.5TB SATA model) • 12 x 750GB SATA 7.2K LFF HDDs installed in external MSA60 array enclosure (9TB SATA model) • 6 x 300GB 3G SAS 15K LFF HDDs installed in external MSA60 array enclosure (1.8TB SAS model) • 12 x 300GB 3G SAS 15K LFF HDDs installed in external MSA60 array enclosure (3.6TB SAS model)
	Optical Drive	HP DVD+R/RW 8X Slim

Maximum Storage Capacity (raw)	Internal (Hot Plug SFF SAS)	1.168TB	8 x 146GB SFF SAS HDDs
	Internal plus External	145.16TB	8 x 146GB SFF SAS int. + 192 x 750GB LFF SATA ext.

Interfaces	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	VGA	2 (1 front, 1 back)
	Network RJ-45	2
	iLO 2 remote management port	1
	USB 2.0 Ports	5 total: 2 front, 2 back, 1 internal NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.

Graphics	Integrated ATI ES1000 1280 x 1024 x 16M color (32MB video standard)

Standard Features

Management	Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS) Remote system management via Remote Desktop or Telnet Integrated Lights-Out 2 featuring Integrated Remote Console with KVM over IP performance over shared network access (Advanced License included standard) • Virtual Text Remote Console • Virtual Power Button Control • Integrated Remote Console • Dedicated & full function shared network connectivity • Browser, command line and scripted access • Automatic IP Configuration via DHCP/DNS/WINS • Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH) • OS independent hardware health status • IML and iLO Event Logging • Support for 12 user accounts with customizable access privilege • Advanced license: upgrades the iLO 2 processor with comprehensive remote control including Virtual KVM graphical console, virtual media, and enterprise security.
Form Factor	Storage Server only: Rack (2U); Height 3.38-inch (8.59 cm); Depth: 26 inches (66 cm) Storage Server plus MSA60 enclosure: Rack (4U)
Industry Standard Compliance	ACPI 2.0 Compliant PCI 2.2 Compliant WOL Support Microsoft® Logo certifications USB 2.0 Support
Server Power Cords	Two high voltage power cords (6 foot IEC C13 to C14) standard
Power Supply	Hot Plug Redundant, 800Watt, CE Mark Compliant
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf.
System Fans	Fully redundant hot plug fans ship standard (N+1).

Standard Features

Rack Airflow Requirements	Rack 10000 series Cabinets The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors. CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: • Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). • Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm). CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage. NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl380/index.html.
Rack Kit	The HP ProLiant DL380 G5 quick deploy rail system provides tool-free support for racks with square or round mounting holes (including Compaq/HP 7000*, 9000, 10000 and HP series), with an adjustment range of 24" - 36". The ambidextrous cable management arm can be mounted on either the left or right side for improved cable management. *High Airflow Inserts (High Air Flow Rack Door Insert for the 7142 Rack (single) - PN: 327281-B21; or High Air Flow Rack Door Insert for the 7142 Rack (6-pack) - PN: 327281-B22) are required to support the HP ProLiant DL380 G5 in 7000 series racks. The DL380 G5 Cable Management Arm is not supported on 7000 series racks. NOTE: Cable management arm must be removed to access hot-plug power supplies when the cable management arm is mounted on the right.
Telco Rack Support	DL380 G5 Telco Rack Kit: Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions (http://www.racksolutions.com/hp/)

Optional Software from HP for Storage Servers

NOTE: DL380 G5 Storage Servers come with either Windows Storage Server 2003 R2 (Standard x64 Edition) or Windows Unified Data Storage Server (Enterprise x64 Edition) pre-installed; check software qualification with 64-bit Windows operating systems before purchase and installation

- Microsoft® iSCSI Software Target - Powerful iSCSI software target solution that provides affordable application storage provisioning, protection, and availability for small and medium office environments. The software adds block storage capability to ProLiant Storage Servers and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. It helps administrators consolidate storage capacity, improve storage utilization, minimize system downtime, simplify backup operations, enable rapid recovery, and provides high availability for key applications and services.

  For more information: http://h18006.www1.hp.com/products/storageworks/ms_iscsi/index.html
  NOTE: Microsoft iSCSI Software Target is available for Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models only; the x64 SAN model includes Microsoft iSCSI Software Target as part of its Windows Unified Data Storage Server 2003 (Enterprise x64 Edition) operating system.

- HP StorageWorks Storage Mirroring Software - HP StorageWorks Storage Mirroring offers a host-based application that performs remote copy over an IP LAN/WAN. Key features include asynchronous replication that can be scheduled to a fine granular level, Logical Unit Number (LUN), file or byte level. Other features include multiple replication configuration options including peer-to-peer and many-to-one. In addition, Storage Mirroring is a very cost effective disaster recovery alternative from one host to another within a LAN, storage center, or between direct attached storage in metro offices and regional centers. Additional configurations allow replication from small office environments to ensure business continuity without an outside IT staff.

  For more information: http://h18006.www1.hp.com/products/storage/software/sm/index.html

  NOTE: All DL380 G5 Storage Servers include a trial version of StorageWorks Storage Mirroring software, plus a link to a white paper on replicating iSCSI targets.

- HP Data Protector Software - The HP Data Protector software is enterprise data protection and disaster recovery, ensuring recovery from any disruption. Data Protector integrates a variety of techniques to eliminate backup and recovery windows. The capabilities to eliminate planned downtime range from online backup and backup of open files to zero-downtime, zero-impact backup. The software provides industry-leading instant recovery as well as several disaster recovery alternatives to eliminate unplanned downtime, allowing recovery of entire data centers in minutes.

  Data Protector is enabling organizations to reduce costs by automating routine tasks to maximize the effectiveness of the data protection staff. For the price of an entry-level product, it provides the enterprise functionality customers need. Data Protector scales from single server to distributed enterprise, covering an extensive range of heterogeneous applications, operating environments and storage configurations with a single solution.

  All ProLiant Storage Servers support using Data Protector as their backup software solution.

  For more information on HP Data Storage Protector:
  http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html
- HP StorageWorks File Migration Agent - HP FMA is an automated solution designed to help simplify Windows-based file, web, and application server administration in small business to

enterprise environments. This is accomplished through policy-based file migration and archive to popular storage targets, including HP StorageWorks Reference Information Storage System (RISS), HP StorageWorks File System Extender, and NAS, via Common Internet File System (CIFS).

The following Windows Storage Server features or add-ons are currently NOT supported by HP File Archiving software:

NOTE: DL380 G5 x64 SAN Storage Server with Windows Unified Data Storage Server 2003 (WUDSS) - (NOT SUPPORTED)
NOTE: Single Instance Storage (SIS) - (NOT SUPPORTED)
NOTE: DFS-Replication (DFS-R) - (NOT SUPPORTED)
NOTE: File Server Resource Manager (FSRM) - Content Filter, & File Screening - (NOT SUPPORTED)

For more information: http://h18006.www1.hp.com/products/storage/software/fma/

- HP Systems Insight Manager Software - HP SIM 5.x is the first unified server and storage management platform. Now, from a single management console, administrators can manage their complete HP server and storage environment with a feature rich, extensible and secure management tool set.
- HP SIM also serves as a central access point for ProLiant Essentials, Integrity Essentials, and Storage Essentials software options that deliver targeted functionality for these platforms. For more information: http://h18013.www1.hp.com/products/servers/management/hpsim/index.html
  - Insight Management Agents - Allow all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.
- HP Storage Essentials NAS Manager Software - Provides comprehensive Network Attached Storage (NAS) management capabilities for HP ProLiant Storage Servers. Visualize your distributed HP NAS solutions and centrally manage their capacity, performance, events, and dependencies to ensure NAS availability and performance and unify SAN and NAS management. For more information on the complete line of HP Storage Essential products go to: http://www.hp.com/go/storageessentials

SAN Compatibility

This information applies primarily to the DL380 G5 x64 SAN Storage Server, which is designed and optimized for integration with a Fibre Channel SAN or storage array (Fibre Channel HBA not included). However, any DL380 G5 Storage Server model can be connected to a Fibre Channel SAN or storage array by adding a recommended HBA.

Host Bus Adapter (HBA) **Support**	HBA selection is left as your choice based on existing infrastructure and/or desired array support. Please see compatible HBAs listed in Step 5 of the product configuration wizard below. NOTE: Please see the following URL for additional information about Fibre Channel HBAs: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html

SAN Support	**HP StorageWorks Enterprise Virtual Array** (EVA)	http://h18006.www1.hp.com/products/storageworks/eva/index.html
	HP StorageWorks Disk Array XP	http://h18006.www1.hp.com/storage/xparrays.html
	HP StorageWorks Modular Smart Array (MSA)	http://h18006.www1.hp.com/storage/disk_storage/msa_diskarrays/index.html

HP ProLiant Storage Servers and third-party storage arrays/SAN interoperability statement

HP acknowledges that some third party storage arrays/SAN environments have been successfully tested for interoperability with the HP ProLiant Storage Server or HP StorageWorks NAS products. HP will provide support for the HP ProLiant Storage Servers or HP StorageWorks NAS products when connected to third-party storage arrays, but HP will not provide support on third party storage arrays/SAN unless specifically called out in an HP Support contract. HP may support the third party SAN environment attached to HP ProLiant Storage Servers or the HP StorageWorks NAS products when specifically under contract with HP, but that SAN coverage does not extend to supporting the SAN connectivity of the third-party array.

If you call HP Services and the problem is determined to be caused by a third-party storage array or the storage arrays' connectivity into a non-HP supported SAN, you will be directed to contact the third-party storage array supplier for support. Please refer to the third-party supplier for information relating to specific support of their storage arrays with Windows Storage Server 2003 R2 and Windows Unified Data Storage Server 2003 platforms.

Service and Support, HP Care Pack, and Warranty Information

Warranty

All DL380 G5 Storage Servers come with a standard 3-3-3 warranty (3 years parts exchange, 3 years labor and 3 years onsite next business day response)

Services Included with the Product

One year of HP Software Support, standard 9x5 business hours (software technical support and software product and documentation updates).

Service and Support Upgrade options

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a minimum period of 1year or multiple years

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased. Specifically HP Care Pack services include

Product number(s)	Care Pack	Duration	Commercial reseller channels	Direct & Enterprise channels
AG815A AG816A	HP Software Support for Storage, 9 x 5	1 year	Bundled	Bundled
		3 years	n/a	HA106A3 - 84N
		4 years	n/a	HA106A4 - 84N
		5 years	n/a	HA106A5 - 84N
	HP Software Support for Storage, 24 x 7	1 year	n/a	HA107A1 - 84N
		3 years	n/a	HA107A3 - 84N
		4 years	n/a	HA107A4 - 84N
		5 years	n/a	HA107A5 - 84N
	Support Plus for Storage	1 year	UD572E	HA109A1 - 84N
		3 years	UD574E	HA109A3 - 84N
		4 years	n/a	HA109A4 - 84N
		5 years	n/a	HA109A5 - 84N
		Post Warranty	UE430PE	n/a
	Support Plus 24 for Storage	1 year	UD573E	HA110A1 - 84N
		3 years	UD575E	HA110A3 - 84N
		4 years	n/a	HA110A4 - 84N
		5 years	n/a	HA110A5 - 84N
		Post Warranty	UE431PE	n/a
	Proactive 24 (P24)	1 year	n/a	HA111A1 - 84N
		3 years	n/a	HA111A3 - 84N
		4 years	n/a	HA111A4 - 84N
		5 years	n/a	HA111A5 - 84N
	Critical Support (CS)	1 year	n/a	HA112A1 - 84N
		3 years	n/a	HA112A3 - 84N
		4 years	n/a	HA112A4 - 84N
		5 years	n/a	HA112A5 - 84N

	6 hour CTR	1 year	UD576E	HA105A1 - 84N
		3 years	UD577E	HA105A3 - 84N
		4 years	n/a	HA105A4 - 84N
		5 years	n/a	HA105A5 - 84N
	Installation	n/a	U7986E	HA113A1 - 5D6
	Installation and Startup (AG771A only)	n/a	U9521E	HA114A - 5AM
AG817A AG818A AG819A AG820A	HP Software Support for Storage, 9 x 5	1 year	Bundled	Bundled
		3 years	n/a	HA106A3 - 7KU
		4 years	n/a	HA106A4 - 7KU
		5 years	n/a	HA106A5 - 7KU
	HP Software Support for Storage, 24 x 7	1 year	n/a	HA107A1 - 7KU
		3 years	n/a	HA107A3 - 7KU
		4 years	n/a	HA107A4 - 7KU
		5 years	n/a	HA107A5 - 7KU
	Support Plus for Storage	1 year	UH596E	HA109A1 - 7KU
		3 years	UH599E	HA109A3 - 7KU
		4 years	n/a	HA109A4 - 7KU
		5 years	n/a	HA109A5 - 7KU
		Post Warranty	UH604PE	n/a
	Support Plus w/Defective Media Retention (DMR)	3 years	UH602E	n/a
	Support Plus 24 for Storage	1 year	UH597E	HA110A1 - 7KU
		3 years	UH600E	HA110A3 - 7KU
		4 years	n/a	HA110A4 - 7KU
		5 years	n/a	HA110A5 - 7KU
		Post Warranty	UH605PE	n/a
	Support Plus 24 w/Defective Media Retention (DMR)	3 years	UH603E	n/a
	Proactive 24 (P24)	1 year	n/a	HA111A1 - 7KU
		3 years	n/a	HA111A3 - 7KU
		4 years	n/a	HA111A4 - 7KU
		5 years	n/a	HA111A5 - 7KU
	Critical Support (CS)	1 year	n/a	HA112A1 - 7KU
		3 years	n/a	HA112A3 - 7KU
		4 years	n/a	HA112A4 - 7KU
		5 years	n/a	HA112A5 - 7KU

		6 hour CTR	1 year	UH598E	HA105A1 - 7KU
			3 years	UH601E	HA105A3 - 7KU
			4 years	n/a	HA105A4 - 7KU
			5 years	n/a	HA105A5 - 7KU
		Installation	n/a	U7986E	HA113A1 - 5D6
	AG771A	HP Software Support for Storage, 9 x 5	1 year	Bundled	Bundled
			3 years	n/a	HA106A3 - 7JY
			4 years	n/a	HA106A4 - 7JY
			5 years	n/a	HA106A5 - 7JY
		HP Software Support for Storage, 24 x 7	1 year	n/a	HA107A1 - 7JY
			3 years	n/a	HA107A3 - 7JY
			4 years	n/a	HA107A4 - 7JY
			5 years	n/a	HA107A5 - 7JY
		Support Plus for Storage	1 year	UH066E	HA109A1 - 7JY
			3 years	UH069E	HA109A3 - 7JY
			4 years	n/a	HA109A4 - 7JY
			5 years	n/a	HA109A5 - 7JY
			Post Warranty	UH074PE	n/a
		Support Plus w/Defective Media Retention (DMR)	3 years	UH072E	n/a
		Support Plus 24 for Storage	1 year	UH067E	HA110A1 - 7JY
			3 years	UH070E	HA110A3 - 7JY
			4 years	n/a	HA110A4 - 7JY
			5 years	n/a	HA110A5 - 7JY
			Post Warranty	UH075PE	n/a
		Support Plus 24 w/Defective Media Retention (DMR)	3 years	UH073E	n/a
		Proactive 24 (P24)	1 year	n/a	HA111A1 - 7JY
			3 years	n/a	HA111A3 - 7JY
			4 years	n/a	HA111A4 - 7JY
			5 years	n/a	HA111A5 - 7JY
		Critical Support (CS)	1 year	n/a	HA112A1 - 7JY
			3 years	n/a	HA112A3 - 7JY
			4 years	n/a	HA112A4 - 7JY
			5 years	n/a	HA112A5 - 7JY
		6 hour CTR	1 year	UH068E	HA105A1 - 7JY
			3 years	UH071E	HA105A3 - 7JY
			4 years	n/a	HA105A4 - 7JY
			5 years	n/a	HA105A5 - 7JY

	Installation	n/a	U7986E	HA113A1 - 5D6

HP Software Support	• Connect with HP Response Center engineers via telephone, electronic communication, or FAX for assistance in resolving software implementation or operations problems. • HP Services provides corrective support to resolve identifiable and reproducible software product problems, and to help you identify problems that are difficult to reproduce. • 9x5 coverage - Service is available during standard business hours, Monday through Friday (excluding holidays).
HP Software Support, 24 x 7	• Provides all the benefits of the regular Software Support, plus HP Services engineers are available around the clock 365 days per year.
HP Support Plus	• Increases the performance and availability of your IT infrastructure with comprehensive, consistent hardware and software services. HP Services engineers deliver onsite hardware support and over-the-phone software support 13 hours per day, 5 days per week. • Encompasses the HP ProLiant Storage Server products, selected multi-vendor hardware and provides trouble-shooting software problems which range from the Storage Server 2003 operating system to the available utilities. In addition, this service makes software updates available to you at substantial savings. • Provides recovery and re-configuration assistance of the HP ProLiant Storage Server using the recovery disk and your saved configuration file.
HP Support Plus 24	• Provides all the benefits of the regular Support Plus Care Pack, plus HP Services engineers are available to deliver onsite hardware and over-the-phone software support around-the-clock 365 days per year.
HP Proactive 24	• An integrated hardware and software support solution that combines efficient problem prevention with responsive technical assistance whenever you need it. • Improves the effectiveness of technologies across your IT infrastructure, and also, establishes a collaborative relationship between you and HP that strengthens your IT team and gives you rapid access to our expertise as issues arise

Software Product Services	• Standard HP warranty ensures Software media will be free of physical defects for a period of 90 days from delivery. • These services are available to upgrade the warranty to (1 or 3) full year of 9 hours by 5 days (or 24x7) software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service.

Hardware Product Services

- Installation services
- On-site maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work
- Migration service consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URLs listed below:
http://www.hp.com/hps/storage/ns_nas.html

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased.
Our Proactive 24 annuity service (with the SAN Module) allows continuous SAN/NAS growth by ensuring that your entire SAN/NAS is safely kept updated with analysis and recommendations on relevant, ongoing firmware (FW) changes and it ensures rapid resolution of complex SAN/NAS issues.

Our SAN Solution Service is a one-time review of your entire SAN/NAS and all the components (applications, HBAs, switches and FW, arrays etc) to ensure that all components are at tested, HP Certified levels. The HP SAN Design/Architecture Service provides as broad and as deep a review and recommendation as needed of how your SAN/NAS environment can be designed and implemented to meet your business storage needs.

The on-going support offerings include various response times (4 hour same day, next day, etc) as well as coverage periods (Monday - Friday, 24x7, 1 yr, 3 yr, etc). These services are available for both hardware and software to ensure all customer support needs are met and can be purchased from either value or volume channels.

Finally HP offers an optional migration service to assist the customer in moving to the newest product release. This may be in the form of a defined kit and service, or may alternatively be performed on a time & material basis.

HP Services allows the customer to leverage HP's experience in selecting and configuring the most widely used security features, and provides an environment that is immediately more available due to increased change control and significantly improved data security.
For more information on these and other service options, please contact any of our worldwide sales offices or visit our Web site at: http://www.hp.com/hps/storage/ns_nas.html

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Installation Services

The service deployment activities will include:

- Unpacking the product, performing initial inspection, and setting up product hardware and power connectivity
- Connecting Customer-provided cables
- Setting the network address and setting appropriate domain variables in the NAS operating system
- Configuring the storage by creating a file share
- Configuring user mapping to make the share available for access
- Creating a sample file data copy or Snapshot

Product number(s):	Care Pack	Duration	Commercial reseller channels	Direct & Enterprise channels
All	Installation for Storage (per event)	One time	Available	HA113A1 - 5D6

Components

The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling

In the following you will be guided through a series of steps to help you configure your ProLiant Storage Server.

NOTE: Options ship separately and are not factory integrated.

Step 1 – Choose a Model

Select one of seven available DL380 G5 Storage Server models

NOTE: Models names are based on raw storage capacity, not available user storage.

HP ProLiant DL380 G5 Storage Server Common Specifications	**Processor**	Quad-Core Intel® Xeon® E5345 (2.33 GHz, 80 Watts, 1333 FSB)
	Cache Memory	8MB (2 x 4MB) Level 2
	Memory Type	PC2-5300 Fully Buffered DIMMs (DDR2-667) with Advanced ECC, mirrored and online spare memory capabilities
	Network Controller	Dual Embedded Dual NC373i Multifunction Gigabit NICs with TCP/IP Offload Engine
	Expansion Slots (embedded)	Two half-height low profile x4 PCIe slots
	Additional Expansion Slots (riser card)	PCIe Riser: one x4 PCIe slot and two x8 PCIe slots
	Optical Drive	HP DVD+R/RW 8X Slim
	Redundancy	Hot plug redundant power supplies and fully redundant (N+1) hot plug fans
	Remote Management	iLO2 Port with Advanced License Pack Included
	Factory Racking	Factory integrates select Storage Servers with other HP products such as HP ProLiant Servers or Enterprise Virtual Arrays. NOTE: #0D1 will appear after the part number on the sales order if HP factory integration is supported.
HP ProLiant DL380 G5 Base Storage Server AG815A	**Operating System**	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Number of Processors	1
	Memory	2 GB (2 x 1GB); up to 32GB supported
	Storage Controller	Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	2 x 36GB 3G SAS 15K SFF HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model
	External Storage	Support for a maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer storage requirements.
	Form Factor	Rack (2U), (3.5-inch)
HP ProLiant DL380 G5 1.16TB SAS Storage Server AG816A	**Operating System**	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Number of Processors	1
	Memory	2 GB (2 x 1GB); up to 32GB supported
	Storage Controller	Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	8 x 146GB 3G SAS 10K SFF HDDs
	External Storage	Support for a maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer storage requirements.
	Form Factor	Rack (2U), (3.5-inch)

HP ProLiant DL380 G5 4.5TB SATA Storage Server AG817A	Operating System	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Number of Processors	1
	Memory	2 GB (2 x 1GB); up to 32GB supported
	Storage Controller	Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	2 x 36GB 3G SAS 15K SFF HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model
	External Storage	HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 6 x 750GB SATA 7.2K LFF HDDs NOTE: 4.5TB (raw) of user storage is installed in the included MSA60 external enclosure NOTE: Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer storage requirements
	Form Factor	Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U)
HP ProLiant DL380 G5 9TB SATA Storage Server AG818A	Operating System	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Number of Processors	1
	Memory	2 GB (2 x 1GB); up to 32GB supported
	Storage Controller	Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	2 x 36GB 3G SAS 15K SFF HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model
	External Storage	HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 12 x 750GB SATA 7.2K LFF HDDs NOTE: 9TB (raw) of user storage is installed in the included MSA60 external enclosure NOTE: Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer storage requirements
	Form Factor	Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U)
HP ProLiant DL380 G5 1.8TB SAS Storage Server AG819A	Operating System	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Number of Processors	1
	Memory	2 GB (2 x 1GB); up to 32GB supported
	Storage Controller	Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	2 x 36GB 3G SAS 15K SFF HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model
	External Storage	HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 6 x 300GB 3G SAS 15K LFF HDDs NOTE: 1.8TB (raw) of user storage is installed in the included MSA60 external enclosure NOTE: Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer

		storage requirements
	Form Factor	Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U)
HP ProLiant DL380 G5 3.6TB SAS Storage Server AG820A	Operating System	Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition
	Number of Processors	1
	Memory	2 GB (2 x 1GB); up to 32GB supported
	Storage Controller	Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	2 x 36GB 3G SAS 15K SFF HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model
	External Storage	HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 12 x 300GB 3G SAS 15K LFF HDDs NOTE: 3.6TB (raw) of user storage is installed in the included MSA60 external enclosure NOTE: Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer storage requirements
	Form Factor	Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U)
HP ProLiant DL380 G5 x64 SAN Storage Server AG771A	Operating System	Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition
	Number of Processors	2
	Memory	4 GB (2 x 2GB); up to 32GB supported
	Storage Controller	Smart Array P400/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot
	Internal Storage	2 x 36GB or 2 x 72GB 3G SAS 10K SFF HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model
	External Storage	Designed for attachment to XP, EVA, and MSA1000/1500cs in a SAN via Fibre-channel HBA (not included) NOTE: This model is primarily intended for use as a SAN gateway, but can support direct attached storage with addition of a Smart Array P800 controller and MSA 60/70 enclosures.
	Form Factor	Rack (2U), (3.5-inch)

Step 2 - Add Another Processor

You can add a second processor to the Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models.
NOTE: The x64 SAN model comes standard with two processors

Processor	Quad-Core Intel® Xeon® Processor E5345 (2.33 GHz, 80 Watts, 1333 FSB)	437940-B21

Step 3 - Add More Memory

Memory	NOTE: Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models come standard with 2 GB (2 x 1GB) of memory and are expandable to 32GB. The x64 SAN model comes standard with 4GB (2 x 2GB) of memory and is expandable to 32GB	
	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21

Step 4 - Add Network Adapters

NOTE: DL380 G5 Storage Servers support only PCIe expansion cards.

Dual Embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine standard. Select additional cards for higher performance and further redundancy.

NOTE: Multifunction Server Adapters (including the embedded NC373i) support the installed Microsoft Windows Server 2003 Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features.

NOTE: Multifunction Server Adapters also support RDMA through optional ProLiant Essentials Licensing Kits.

Network Adapters	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
	HP NC510F PCIe 10 Gigabit Server Adapter	414126-B21
	NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510F adapter	
	HP NC510C PCIe 10 Gigabit Server Adapter	414129-B21
	NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510C adapter	

Step 5 – Add More Storage

NOTE: DL380 G5 Storage Servers support only PCIe expansion cards.

DL380 G5 Storage Servers (except the x64 SAN model) come standard with one installed Smart Array P800 controller for internal drives and easy external expansion; the x64 SAN model comes standard with one Smart Array P400 controller. Select additional controllers from the below list only if required.

NOTE: Please consult specifications for available expansion slots (which varies by model) when ordering addition storage controllers.

Product Configuration Wizard

DL380 G5 Storage Servers accommodate an internal maximum of 2 operating system SFF HDDs plus 6 data SFF HDDs (note that the 1.16TB SAS model comes standard with eight internal SAS drives that span both O/S and data; all other models come standard with two 36GB SFF O/S drives only).

NOTE: The DL380 G5 x64 SAN Storage Server is primarily intended for use as a SAN gateway, but can support internal storage and/or direct attach storage with a Smart Array P800 controller and MSA50/60/70 enclosures. Conversely, all other models can support SAN connection via installation of a recommended Fibre Channel HBA.

Storage Controllers	SAS Controllers	
	Smart Array E500 Controller	
	Smart Array E500/256MB Controller	435129-B21
	Smart Array P400 Controller	
	HP Smart Array P400/256MB Controller	405132-B21
	HP Smart Array P400/512MB BBWC Controller	411064-B21
	512MB Battery-backed cache upgrade NOTE: Contains batter and memory module. For Smart Array P400 Controller.	405148-B21
	Battery-backed write cache upgrade NOTE: Contains battery only. For Smart Array P400 Controller.	383280-B21
	Smart Array P400 Battery Attach Kit NOTE: This option kit contains a 24" battery cable and adhesive material for installing a battery into the HP ProLiant DL380 G5 if a Smart Array P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.	417836-B21
	Smart Array P800 Controller	
	HP Smart Array P800/512 BBWC Controller	381513-B21
	NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html (Smart Array E500 Controller) http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.html (Smart Array P400 Controller) http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller)	
	SAS HBAs	
	HP SC44Ge Host Bus Adapter	416096-B21
	NOTE: Please see the following QuickSpecs for additional information: http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA)	
	SCSI HBAs	
	HP SC11Xe Host Bus Adapter	412911-B21
	HP U320e SCSI Host Bus Adapter	AH627A
	NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	

Fibre Channel Host Bus Adapters

The DL380 G5 x64 SAN Storage Server is designed and optimized for integration with a Fibre Channel SAN or storage array; however any DL380 G5 Storage Server model can be connected to a Fibre Channel SAN or storage array by adding a recommended HBA.

NOTE: A Fibre Channel HBA is not included as standard with any ProLiant Storage Server. HBA selection is left as your choice based on existing infrastructure and/or desired array support.

NOTE: DL380 G5 Storage Servers support only PCIe expansion cards.

NOTE: For the complete listing of Fibre Channel Host Bus Adapters, please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html

HP StorageWorks FC2142SR 4Gb PCIe HBA	A8002A
HP StorageWorks FC2242SR Dual Channel 4 Gb PCIe HBA	A8003A
HP StorageWorks FC1142SR 4Gb PCIe HBA	AE311A
HP StorageWorks FC1242SR Dual Channel 4 Gb PCIe HBA	AE312A

External Storage Enclosures

HP StorageWorks Modular Smart Arrays

HP StorageWorks Modular Smart Array 50 Enclosure NOTE: Rack-mountable 10-drive (2.5" 3G SAS/1.5G SATA) 1U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	364430-B21
HP StorageWorks 60 Modular Smart Array NOTE: Rack-mountable 12-drive (3.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	418408-B21
HP StorageWorks MSA60 1.8TB SAS HDD Bundle (MSA60 w/12 146GB 15K SAS LFF HDD)	AG822A
HP StorageWorks MSA60 9TB SATA HDD Bundle (MSA60 w/12 750GB 15K SATA LFF HDD)	AG823A
HP StorageWorks MSA60 3.6TB SAS HDD Bundle (MSA60 w/12 300GB 15K SAS LFF HDD) NOTE: The MSA60 bundles are available in the Americas, Asia Pacific (AP) and Japan only. They are not available in Europe, Middle East and Africa.	AG824A
HP StorageWorks 70 Modular Smart Array NOTE: Rack-mountable 25-drive (2.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	418800-B21
HP StorageWorks MSA70 1.8TB SAS HDD Bundle (MSA70 w/25 72GB 15K SAS SFF HDD)	AG825A
HP StorageWorks MSA70 3.6TB SAS HDD Bundle (MSA70 w/25 146GB 10K SAS SFF HDD) NOTE: The MSA70 bundles are available in the Americas, Asia Pacific (AP) and Japan only. They are not available in Europe, Middle East and Africa.	AG893A
HP StorageWorks 1000 Modular Smart Array NOTE: This array enclosure requires addition of a Fibre Channel Host Bus Adapter NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.html (Worldwide)	201723-B22

HP StorageWorks 1500 cs Modular Smart Array NOTE: This array enclosure requires addition of a Fibre Channel Host Bus Adapter NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	AA986A
HP StorageWorks 2012fc Single Controller Modular Smart Array	AJ742A
HP StorageWorks 2012fc Dual Controller Modular Smart Array	AJ743A
HP StorageWorks 2212fc Dual Enhanced Controller Modular Smart Array	AJ745A
HP StorageWorks 2000fc Modular Smart Array Controller NOTE: All 2000fc series array enclosures require addition of a Fibre Channel Host Bus Adapter NOTE: Please see the 2000fc Modular Smart Array QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12991_div/12991_div.html (Worldwide)	AJ744A
HP StorageWorks 2012i Single Controller Modular Smart Array	AJ746A
HP StorageWorks 2012i Dual Controller Modular Smart Array	AJ747A
HP StorageWorks 2000i Modular Smart Array Controller NOTE: Please see the 2000i Modular Smart Array QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12992_div/12992_div.html (Worldwide)	AJ748A
Additional Fibre Channel SAN / Array Support: XP and EVA NOTE: Requires addition of a Fibre Channel Host Bus Adapter NOTE: Please see the Storage Array Systems QuickSpecs below for more information about configuration requirements	
HP StorageWorks Enterprise Virtual Array Family http://h18006.www1.hp.com/products/quickspecs/12408_div/12408_div.html HP StorageWorks XP Disk Arrays http://h18006.www1.hp.com/products/quickspecs/12072_div/12072_div.html (XP 12000) http://h18000.www1.hp.com/products/quickspecs/12275_div/12275_div.html (XP 10000) http://www.hp.com/products1/storage/products/disk_arrays/highend/xp1024/index.html (XP1024) http://www.hp.com/products1/storage/products/disk_arrays/highend/xp128/index.html (XP128) http://www.hp.com/products1/storage/products/disk_arrays/highend/xp48/index.html (XP48) http://www.hp.com/products1/storage/products/disk_arrays/highend/xp512/index.html (XP512)	

Hard Drives
(Internal Expansion)

Serial Attached SCSI (SAS) Hard Drives

Hot Plug 2.5" (SFF) SAS

HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
HP 72GB 3G SAS 10K SFF SP HDD	375861-B21

	HP 72GB 3G SAS 10K SFF DP HDD	384842-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 36GB 3G SAS 15K SFF DP HDD	418369-B21
	NOTE: Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)	
	Serial ATA (SATA) Hard Drives	
	Hot Plug 2.5" (SFF) SATA	
	HP 120GB SATA 5.4K SFF HDD	431786-B21
	HP 60GB SATA 5.4K SFF HDD	379306-B21
	NOTE: SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html (Worldwide)	
Hard Drives (External Array Expansion)	Serial Attached SCSI (SAS) Hard Drives	
	Hot Plug 3.5" (LFF) SAS	
	HP 300GB 3G 15K SAS 3.5" SP HDD	431944-B21
	HP 300GB 3G 15K SAS 3.5" DP HDD	416127-B21
	HP 146GB 3G 15K SAS 3.5" SP HDD	375872-B21
	HP 146GB 3G 15K SAS 3.5" DP HDD	384854-B21
	HP 72GB 3G 15K SAS 3.5" SP HD	375870-B21
	HP 72GB 3G 15K SAS 3.5" DP HDD	384852-B21
	HP StorageWorks MSA2 146GB 3G 15K 3.5 inch Dual-port SAS HDD (MSA2000 series only)	AJ735A
	HP StorageWorks MSA2 300GB 3G 15K 3.5 inch Dual-port SAS HDD (MSA2000 series only)	AJ736A
	Hot Plug 2.5" (SFF) SAS	
	HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
	HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 72GB 3G SAS 10K SFF DP HDD	384842-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 36GB 3G SAS 15K SFF DP HDD	418369-B21

NOTE: Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

Serial ATA (SATA) Hard Drives

Hot Plug 3.5" (LFF) SATA

HP 750GB SATA 7.2K 3.5" HDD	432341-B21
HP 500GB SATA 7.2K 3.5" HDD	395473-B21
HP 250GB SATA 7.2K 3.5" HDD	349239-B21
HP StorageWorks MSA2 500GB 7.2K 3.5 inch SATA HDD (MSA2000 series only)	AJ738A
HP StorageWorks MSA2 750GB 7.2K 3.5 inch SATA HDD (MSA2000 series only)	AJ739A

Hot Plug 2.5" (SFF) SATA

HP 120GB SATA 5.4K SFF HDD	431786-B21
HP 60GB SATA 5.4K SFF HDD	379306-B21

NOTE: SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.html (Worldwide)

Step 6 - Add Optional Software

HP x64 Windows Unified Data Storage Server OS Upgrade — T5322A

Software-only Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition operating system upgrade for select ProLiant Storage Server SAN gateway models running Microsoft Windows Storage Server 2003 (Enterprise Edition only):

- DL380 G5 SAN Storage Server (AG456A)
- DL585 Storage Server (AE454A)
- DL585 Storage Server (383719-B21)
- DL585 Storage Server (393973-B21)
- DL380 G4 SAN Storage Server (AE438A)
- DL380 G4 SAN Storage Server (371227-B21)

This upgrade requires a clean install and includes all Windows Unified Storage Server 2003, Enterprise x64 Edition features, including Microsoft iSCSI Software Target, Microsoft Cluster Server (MSCS), and 64-bit processing.
NOTE: Check for HP and 3rd-party software qualification with 64-bit Windows operating systems before purchase and installation

Microsoft® iSCSI Software Target

NOTE: For Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models only; the x64 SAN model includes Microsoft iSCSI Software Target as part of its Windows Unified Data Storage Server 2003 operating system.

Microsoft iSCSI Software Target adds block storage capability to ProLiant Storage Servers and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. It is a powerful iSCSI software solution that provides affordable application storage provisioning, protection, and availability for small and medium office environments. It helps administrators consolidate storage

capacity, improve storage utilization, minimize system downtime, simplify backup operations, enable rapid recovery, and provides high availability for key applications and services.

Microsoft iSCSI Target Software 1 LTU T4433A

NOTE: For more information go to HP's Microsoft® iSCSI Software Target website at: http://h18006.www1.hp.com/products/storageworks/ms_iscsi/index.html

HP StorageWorks Storage Mirroring Software

HP StorageWorks Storage Mirroring (SM) Software is an ideal entry host-based software product for IP networks. SM does not require high bandwidth Fibre Channel networks, high capacity replication and zero down time service levels. Storage Mirroring provides near real-time full application or file recovery up to the last byte replication. SM is an excellent choice for low bandwidth; low storage volume changes and meets business recovery goals within tens of minutes or hours. The immediate return on investment is realized in the reduced management cost associated with branch or small offices networks.
Product Highlights:

- High availability with Microsoft Windows 2000/NT/2003servers
- Application aware and supported with Exchange, SQL and Oracle
- Host-based remote storage copy with TCP/IP networks
- Data distribution one-to-many or 'fan-out' to multiple destinations
- Data migration utility for transferring large data projects
- Centralize backup, data protection and recovery operations
- Built in scheduler for off hours replication
- Built in network bandwidth utilization management
- Disaster recovery between source and destination failover sites
- Powered by NSI Software's Double-Take patented 'Sequential Transfer Asynchronous Replication' technology
- Sequential transfer maintains write sequential across multiple files for data integrity
- Asynchronous replication allows hosts to continue processing for maximum performance
- Introducing a new software option (Server Recovery Option) that captures a server's configuration information including OS, patches, drivers, and Service Packs. The IT department can respond to a server failure and use the Server Recover Option to re-create the boot sequence on a new server plus all of the data captured during the replication and send that data to the production site for replacement.
- Introducing a new software feature (Full Server Failover) that creates a one-to-one relationship between two servers. Should a production server fail, the server running Full Server Failover would assume the identify of the production server. The failover can occur over any distance and does not require "Enterprise" versions of the operating system or applications

NOTE: DL380 G5 Storage Servers include a trial version of StorageWorks Storage Mirroring software.

Special note about Microsoft iSCSI Software Target and replication:
All HP ProLiant Storage Servers include the Distributed File System Replication (DFS-R) feature in the pre-installed Windows Storage Server 2003 R2 and Windows Unified Data Storage Server 2003 operating systems. DFS-R is a file-based replication technology that only replicates files when they are closed. Microsoft iSCSI Software

Target does not close the virtual disk files (.vhd files) while they are in use, and so these files are not replicated during normal usage when replicating using DFS-R. Therefore, if iSCSI Software Target virtual disk files need to be replicated, DFS-R should not be used, and HP StorageWorks Storage Mirroring software should be considered instead. Storage Mirroring software asynchronously replicates each write into the file system to a secondary system, and therefore it can be used to effectively replicate iSCSI Software Target virtual disk files.

NOTE: DL380 G5 Storage Servers include a desktop link to a white paper with more information on replicating iSCSI targets.

StorageWorks Storage Mirroring Media Kit v5	T5437A
StorageWorks Storage Mirroring NAS Edition 1 LTU	T5442A
StorageWorks Storage Mirroring NAS Edition 10 LTU	T5443A

NOTE: For more information go to the HP StorageWorks Storage Mirroring website at: http://h18006.www1.hp.com/products/storage/software/sm/index.html

Step 7 - Add a Backup Solution

Tape Drives

NOTE: For the complete listing of Tape Drive offerings, please see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html
For recommended tape drive offerings for this ProLiant server see the following:

USB Tape Drives

HP StorageWorks 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive	AG703A

SAS Tape Drives

NOTE: HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape

HP StorageWorks DAT 160 SAS Internal Tape Drive NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	Q1587A
HP StorageWorks Ultrium 448 SAS Internal Tape Drive NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	DW085A
HP StorageWorks Ultrium 920 SAS Internal Tape Drive NOTE: HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	EH847A
HP StorageWorks 1U SAS Rack-mount kit with one LTO-4 Ultrium 1760	EH946A

NOTE: Please refer to the "Tape Drives, Tape Autoloaders & Tape Libraries" table in the Storage section of this document for a list of SAS controllers with tape support.

SCSI Tape Drives

NOTE: HP recommends purchasing the HP SC11Xe HBA (412911-B21) for a dedicated SCSI HBA for tape.

HP StorageWorks 1U Rack-mount kit with one Ultrium 448 (Carbonite)	DW028B
HP StorageWorks 1U SCSI Rack-mount kit with one Ultrium 920	EH903A
HP StorageWorks 3U SCSI Rack-Mount with 1 LTO-4 Ultrium 1840 Tape Drive	EH926A

NOTE: Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items:

	http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html (Worldwide) http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html (Worldwide) For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect.	
	Rack-Mount Tape Drive Enclosures	
	HP StorageWorks 1U SCSI Rack-Mount kit NOTE: The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives.	A7445B
	HP StorageWorks 1U USB Rack-Mount Kit NOTE: The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 24 USB, DAT 40 USB and DAT 72 USB tape drives.	A8007A
	HP StorageWorks 1U SAS Rack-Mount Kit NOTE: The 1U SAS Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the Ultrium 448 SAS and Ultrium 920 SAS tape drives. NOTE: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.	AE459A
	NOTE: Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits: http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.html (Worldwide)	
HP D2D Backup System	HP StorageWorks D2D110 Backup System NOTE: 1TB of Disk Storage.	EH880A
	HP StorageWorks D2D110 Backup System with Data Protector Express Software Kit NOTE: 1TB of Disk Storage.	EH923A
	HP StorageWorks D2D120 Backup System NOTE: 2TB of Disk Storage.	EH884A
	HP StorageWorks D2D120 Backup System with Data Protector Express Software Kit NOTE: 2TB of Disk Storage.	EH924A
	HP StorageWorks D2D130 Backup System NOTE: 3TB of Disk Storage.	EH950A
	HP StorageWorks D2D130 Backup System with Data Protector Express Software Kit NOTE: 3TB of Disk Storage	EH951A
	HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive NOTE: 3TB of Disk Storage.	EH952A
	NOTE: Please see the HP D2D Backup Systems QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12651_div/12651_div.html (Worldwide)	

Tape Autoloaders	**HP StorageWorks DAT Autoloader**	
	HP StorageWorks DAT 72x10 tape autoloader	AE313B
	HP StorageWorks 1/8 Tape Autoloader	
	HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP StorageWorks 1/8 Ultrium 920 G2 Tape Autoloader	AH165A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	HP StorageWorks 1/8 Ultrium 448 G2 Tape Autoloader	AH164A
	HP StorageWorks 1/8 Ultrium 232 G2 Tape Autoloader	AH163A
	HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit	AH166A
	NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions	
	NOTE: Please reference the 1/8 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs	
Tape Libraries	**HP StorageWorks MSL2024 Tape Library**	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ033A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 4GB FC Library	AJ034A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
	HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Library	AG326B
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL2024 1 Ultrium 920 Drive Library	AH169A
	HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 1 Ultrium 448 Drive Library	AG320A
	HP StorageWorks MSL4048 1 Ultrium 920 SAS Drive Library	AH560A
	HP StorageWorks MSL4048 1 Ultrium 920 Drive Library	AH171A
	HP StorageWorks MSL4048 1 Ultrium 960 Drive Library	AG322A
	HP StorageWorks MSL4048 1 Ultrium 960 4GB FC Library	AG324B
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ035A
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 4GB FC Library	AJ036A
	HP StorageWorks MSL8096 Tape Library	
	HP StorageWorks MSL8096 2 Ultrium 920 SAS Drive Library	AH561A
	HP StorageWorks MSL8096 2 Ultrium 960 4GB FC Library	AH218A
	HP StorageWorks MSL8096 2 Ultrium 960 Drive Library	AH219A
	HP StorageWorks MSL8096 2 LTO-4 Ultrium 1760 SAS Drive Library	AK382A
	HP StorageWorks MSL8096 2 LTO-4 Ultrium 1840 SCSI Drive Library	AJ039A
	HP StorageWorks MSL8096 2 LTO-4 Ultrium 1840 4GB FC Library	AJ040A
	HP StorageWorks MSL6000 Tape Library	
	LTO-4 Ultrium 1840 technology	
	HP StorageWorks MSL6030 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ029A
	HP StorageWorks MSL6030 1 LTO-4 Ultrium 1840 4GB FC Library	AJ030A

	HP StorageWorks MSL6060 2 LTO-4 Ultrium 1840 SCSI Drive Library	AJ031A
	HP StorageWorks MSL6060 2 LTO-4 Ultrium 1840 4GB FC Library	AJ032A
	LTO-3 Ultrium 960 technology	
	HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606B
	HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library	AD608B
	HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607B
	HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609B
	NOTE: Please reference the MSL2024, MSL4048, MSL8096, and MSL6000 Tape Library QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at: http://www.hp.com/go/ebs	
HP Data Protector Express Software	HP Data Protector Express Backup Server Software Media & LTU	BB117EA
	HP Data Protector Express Backup Server Upgrade from Data Protector Express Single Server Edition Media & LTU	BB117ET
	NOTE: Please see the HP Data Protector Express QuickSpecs for additional information regarding the purchase of HP Data Protector Express software: http://h18000.www1.hp.com/products/quickspecs/12337_div/12337_div.html (Worldwide)	

Step 8 - Add UPS, Power, and Rack Options

NOTE: All ProLiant DL380 G5 Storage Server models include a standard rail kit for HP racks and two high voltage (220V/10A) power cords (6 foot IEC C13 to C14) standard

Uninterruptible Power Systems - Rack	HP R1.5 VA 1U UPS INTL	AF418A
	HP R1.5 VA 1U UPS JPN	AF421A
	HP R1.5 VA 1U UPS NA	AF419A
	HP R/T2200 2-U ERM	AF412A
Power Cords	Nema 5-15P to IEC320-C13, North America low voltage (6 ft/2 m)	AF556A
	Power Cord, Euro, 10A 250V Straight (6 ft/2 m)	AF568A
	Power Cord, UK/HK/SING, 10A 250V Straight (6 ft/2 m)	AF570A
	Power Cord, Danish, 10A 250V Straight (6 ft/2 m)	AF566A
	Power Cord, Swiss, 10A 250V Straight (6 ft/2 m)	AF565A
	Power Cord, Italian/Chile, 10A 250V Straight (6 ft/2 m)	AF571A
	Power Cord, South Africa, 10A 250V Straight (8 ft/2.5 m)	AF567A

HP Monitored Power Distribution Unit (PDU)	17.3 kVA Monitored PDU Model S2324	AF503A
	8.6 kVA Monitored PDU Model S1324	AF504A
	16.6 kVA Monitored PDU Model S2140	AF505A
	8.3 kVA Monitored PDU Model S1140	AF506A
	22 kVA Monitored PDU Model S2316	AF507A
	11 kVA Monitored PDU Model S1316	AF508A
	14.7 kVA Monitored PDU Model S2132	AF509A
	7.3 kVA Monitored PDU Model S1132	AF510A
	4.9kVA Monitored PDU model S124	AF514A
	7.3kVA Monitored PDU model S132	AF515A
USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	1.44MB External USB Floppy Drive	DC141B
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP 1GB USB 2.0 Floppy Drive Key	442085-B21
	HP 256MB USB 2.0 Floppy Drive Key	442084-B21
HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack-Unassembled NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.html (Worldwide) NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	358254-B21
HP Rack 10000 G2 Series (Carbon/ Graphite Metallic)	10642 G2 (42U) Rack Cabinet – Pallet	AF001A
	10642 G2 (42U) Rack Cabinet – Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet – Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension – Shock Pallet	AF004A
	10636 G2 (36U) Rack Cabinet – Pallet	AF011A
	10636 G2 (36U) Rack Cabinet – Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet – Crated	AF013A
	10636 G2 (36U) Rack Cabinet, with Extension – Shock Pallet	AF014A
	10622 G2 (22U) Rack Cabinet - Pallet	AF021A
	10622 G2 (22U) Rack Cabinet - Shock Pallet	AF022A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet	AF041A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet	AF042A
	10647 G2 (47U) Rack Cabinet - Pallet	AF031A
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.	

	NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide) NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	
HP Rack 10000 Series (Graphite Metallic)	HP S10614 (14U) Rack Cabinet – Shock Pallet	292302-B22
	NOTE: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). NOTE: It is mandatory to use a shock pallet in order to ship racks with equipment installed. Not all Compaq equipment is qualified to be shipped in the Rack 10000 series. NOTE: Please see the Rack 10000 QuickSpecs for additional options and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.html (Worldwide) NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower	
Keyboards and Monitors	TFT7210R Rack Mounted 17" Monitor NOTE: For a complete list of Monitors please view the following URL: http://www.hp.com/go/kvm	348373-B21
	TFT7600 Rackmount Keyboard Monitor US	AG052A
	TFT7600 Rackmount Keyboard Monitor UK	AG053A
	TFT7600 Rackmount Keyboard Monitor GR	AG054A
	TFT7600 Rackmount Keyboard Monitor FR	AG055A
	TFT7600 Rackmount Keyboard Monitor IT	AG056A
	TFT7600 Rackmount Keyboard Monitor SP	AG057A
	TFT7600 Rackmount Keyboard Monitor DEN	AG058A
	TFT7600 Rackmount Keyboard Monitor NOR	AG059A
	TFT7600 Rackmount Keyboard Monitor SE/FI	AG060A
	TFT7600 Rackmount Keyboard Monitor SWI	AG061A
	TFT7600 Rackmount Keyboard Monitor PORT	AG062A
	TFT7600 Rackmount Keyboard Monitor BEL	AG063A
	TFT7600 Rackmount Keyboard Monitor JPN2	AG064A
	TFT7600 Rackmount Keyboard Monitor RUS	AG065A
	TFT7600 Rackmount Keyboard Monitor INTL	AG066A
	1U Rackmount Keyboard with USB, US	AG072A
	1U Rackmount Keyboard with USB, UK	AG073A
	1U Rackmount Keyboard with USB, GR	AG074A
	1U Rackmount Keyboard with USB, FR	AG075A
	1U Rackmount Keyboard with USB, ITL	AG076A

	1U Rackmount Keyboard with USB, SP	AG077A
	1U Rackmount Keyboard with USB, DEN	AG078A
	1U Rackmount Keyboard with USB, NOR	AG079A
	1U Rackmount Keyboard with USB, SE/FI	AG080A
	1U Rackmount Keyboard with USB, SWI	AG081A
	1U Rackmount Keyboard with USB, PORT	AG082A
	1U Rackmount Keyboard with USB, BEL	AG083A
	1U Rackmount Keyboard with USB, JPN2	AG084A
	1U Rackmount Keyboard with USB, RUS	AG085A
	1U Rackmount Keyboard with USB, INTL	AG086A
	NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower.	
HP KVM Switch Options	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	2x16 Server Console Switch with Virtual Media	AF600A
	PS/2 Virtual Media Interface Adapter, 1 pack	AF604A
	NOTE: Requires PS/2 and one USB port on server.	
	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	USB Interface Adapter, 1 pack	336047-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21
	NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack	AF613A
	NOTE: Required for supporting USB peripherals.	
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	

HP Serial Console Server Options	HP 16 Port Serial Console Server (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A
	NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	

Step 9 - Order HPTS Service Care Packs

Service Care Packs or warranty upgrades enhance the base hardware warranty provided with your HP ProLiant Storage Server. The Care Packs provide support for product software and operating system with extended hours of coverage and reduced response time. And Care Packs allow the customer to budget fixed cost support rather than variable costs that include parts and labor.
Note that the standard HP warranty ensures software media will be free of physical defect for a period of 90 days from delivery. However, all ProLiant Storage Servers come with a full year of 9 hours by 5 days software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service. Extended hours of coverage and additional years of service are available should the customer require more support.
See "Service and Support Upgrade options" section for more information on available Care Packs for your ProLiant Storage Server.

Memory

Standard Memory
PC2-5300 Fully Buffered DIMMs (DDR2-667) with 4:1 and 2:1 interleaving available (interleaving requires identical DIMMs)

- 2 GB (2 x 1GB): Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, and 3.6TB SAS models
- 4 GB (2 x 2GB): x64 SAN model

Upgrading Memory and Memory Interleaving
When upgrading memory, DIMMs 1A and 2A must match. DIMMs 3B and 4B, DIMMs 5C and 6C, and DIMMs 7D and 8D must match and must be installed as a pair. When DIMMs 1A and 2A are populated the system is automatically configured for 2:1 interleaving. When all 4 banks are populated the system is automatically configured for 4:1 interleaving. When four, six, or eight DIMMs are populated with identical DIMMs the system is automatically configured for bank interleaving.

Maximum Memory

- 32 GB (8 x 4GB)

Standard Memory Replaced with Optional Memory
Up to 32 GB of memory is available with the removal of the standard memory and the optional installation of 4 GB PC2-5300 Fully Buffered DIMMs (DDR2-667) memory kits.

NOTE: Chart does not represent all possible configurations.

		Slot							
Configuration		1	2	3	4	5	6	7	8
Standard (all models except x64 SAN model)	2 GB	1 GB	1 GB	Empty	Empty	Empty	Empty	Empty	Empty
Standard (x64 SAN model)	4 GB	2 GB	2 GB	Empty	Empty	Empty	Empty	Empty	Empty
Maximum (all models)	32 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB

NOTE: In the online spare configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank, Online spare memory is configured through RBSU.
NOTE: Mirrored Memory uses mirrored banks to provide a high level of memory redundancy. Customer chooses to implement or not: User selectable via BIOS and default is off.

Following are memory options available from HP:

1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21

In Advanced ECC mode, FBDIMMs must be populated as specified in the following table:

Memory

Configuration	Bank A 1A and 3A	Bank B 5B and 7B	Bank C 2C and 4C	Bank D 6D and 8D
1	X	-	-	-
2	X	X	-	-
3	X	X	X	-
4	X	X	X	X

Online spare memory configuration

Online spare FBDIMM configuration requirements (in addition to general configuration requirements):

- When only bank A is being used, it must be fully populated with dual-rank FBDIMMs.
- If banks A and C are being used, they must be fully populated.
- If installed, bank A and bank C must contain FBDIMMs with identical part numbers.
- If installed, bank B and bank D must also contain FBDIMMs with identical part numbers

In online spare mode, FBDIMMs must be populated as specified in the following table:

Configuration	Branch 0 Bank A 1A and 3A	Branch 0 Bank C 2C and 4C	Branch 1 Bank B 5B and 7B	Branch 1 Bank D 6D and 8D
1*	X	-	-	-
2	X	X	-	-
3	X	X	X	X

*Configuration 1 is only supported if using bank A, populated with dual-rank FBDIMMs. All FBDIMMs 1GB and above are dual-rank.
After installing FBDIMMs, use RBSU to configure the system for online spare memory support.

Mirrored memory configuration

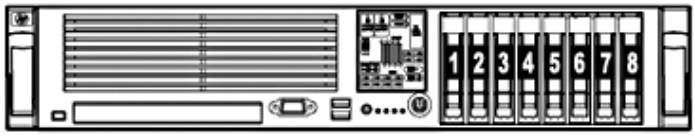
Mirrored memory FBDIMM configuration requirements (in addition to general configuration requirements):

- Banks A and B must be fully populated.
- Bank A and bank B must contain FBDIMMs with identical part numbers. If installed, bank C and bank D must also contain FBDIMMs with identical part numbers.

When using mirrored memory mode, FBDIMMs must be populated as specified in the following table:

Configuration	Bank A 1A and 3A	Bank B 5B and 7B	Bank C 2C and 4C	Bank D 6D and 8D
1	X	X	-	-
2	X	X	X	X

NOTE: After installing FBDIMMs, use RBSU to configure the system for mirrored memory support ("Configuring mirrored memory" on page 57).



1-8 Eight SFF SAS hot plug hard drive bays

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
HP DVD+R/RW 8X Slim	1	Slimline bay	Integrated IDE

Hard Drives

Hot Plug 2.5" (SFF) SAS

	Quantity Supported	Position Supported	Controller
36GB 3G SAS 15K 36GB 3G SAS 10K 72GB 3G SAS 15K 72GB 3G SAS 10K 146GB 3G SAS 10K	2 x 36GB 15k standard (all models except x64 SAN model) 2 x 36GB or 2 x 72GB 10k standard (x64 SAN model) Up to 6 additional drives supported	Mirrored O/S drives installed in slots 1 & 2; slots 3-8 may accommodate additional drives	Smart Array P800 Controller (all models except x64 SAN model) Smart Array P400 Controller (x64 SAN model)
	8 x 146GB standard (1.16TB SAS model)	1-8	Smart Array P800 Controller

Hot Plug 2.5" (SFF) SATA

	Quantity Supported	Position Supported	Controller
60GB SATA 5.4K 120GB SATA 5.4K	Up to 6	3-8	Smart Array P800 or P400 Controller

Storage

External Storage

	Quantity Supported	Position Supported	Controller
Modular Smart Array 60	Up to 8 per Smart Array P800 controller	External	Smart Array P800 Controller Smart Array E500 controller
Modular Smart Array 70	Up to 4 per Smart Array P800 controller	External	Smart Array P800 Controller Smart Array E500 controller
Modular Smart Array 50 Enclosure	2 per connector (supports 1+1 cascading)	External	Smart Array P800 Controller

Modular Smart Array 1000: http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.html (Worldwide)
Modular Smart Array 1500 cs: http://www.hp.com/go/MSA1500cs

Maximum Raw Storage Capacity

Internal	1.16TB raw (8 x 146GB SAS SFF)
External	144TB raw (192 x 750 GB SATA) [2 x SA P800 connected to 16 x MSA60 full of 750 GB SATA HDDs]
Total	145.16TB raw (8 x 146GB int. + 192 x 750GB ext.)

Factory RAID Configuration

NOTE: Where applicable, user storage is factory configured into 2TB (maximum) logical drives to accommodate Microsoft iSCSI Software Target (which currently does not support either dynamic disks or logical drives greater than 2TB on basic disks). However, Windows Storage Server 2003 R2 or Windows Unified Data Storage Server 2003 O/S and Smart Array P800 and P400 controllers do support creation of logical drives greater than 2TB using GUID Partitioning Table (GPT) disk architecture.

Base, 1.16TB SAS, 4.5TB SATA, 9TB SATA, 1.8TB SAS, 3.6TB SAS, and x64 SAN models

	Volume	RAID level	Physical Drives
Logical Disk 1	Operating System	RAID 1	0-1
Logical Disk 2	DON'T ERASE recovery partition	RAID 1	0-1

1.16TB SAS model

	Volume	RAID level	Physical Drives
Logical Disk 1	Operating System	RAID 5	0-7
Logical Disk 2	DON'T ERASE recovery partition	RAID 5	0-7
Logical Disk 3	User Data	RAID 5	0-7

Tape Drives, Tape Autoloaders, and Tape Libraries

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/division/10233.html (Worldwide)

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/division/10809.html (Worldwide)

NOTE: SAS Tape Drives: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape

drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

NOTE: For complete listing of tape drive offerings see
http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html
For recommended tape drive offerings for this ProLiant server see the following:

	Position Supported	Controller	Part Number
HP StorageWorks SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-2 Ultrium 460 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 DLT VS160 SDLT 600 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21
HP StorageWorks USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks Tape Drives, SAS External LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS 1U Rack-Mount Kit	External	HP SC44Ge Host Bus Adapter Smart Array E500/256MB Controller NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	416096-B21 435129-B21
HP StorageWorks SCSI Tape Automation, External DAT 72X10 Autoloader 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096 MSL6000	External	HP SC11Xe Host Bus Adapter HP U320e SCSI Host Bus Adapter NOTE: Only valid for MSL tape libraries.	412911-B21 AH627A
HP StorageWorks SAS	External	HP SC44Ge Host Bus Adapter	416096-B21

Storage

Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096		NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	
HP StorageWorks Fibre Tape Libraries, External MSL2024 MSL4048 MSL8096 MSL6000	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A
HP StorageWorks D2D Backup Systems D2D110 D2D120	External	Embedded Network Controller	N/A

Power Specifications

Power Supply Specification – AC	Part number		380622-001			
	Spare Kit		403781-001			
Operational Input Voltage Range (Vrms)	90 to 264					
Frequency Range (Nominal) (Hz)	47 to 63 (50/60)					
Nominal Input Voltage (Vrms)	100	120	208	220	230	240
Max Rated Output Wattage Rating	800	850	1000	1000	1000	1000
Nominal Input Current (A rms)	10.0	8.8	5.85	5.5	5.2	4.97
Max Rated Input Wattage Rating (Watts)	980	1035	1193	1186	1172	1169
Max. Rated VA (Volt-Amp)	1000	1056	1217	1210	1196	1193
Efficiency (%)	81.5	82	84	84	85	85.5
Power Factor	0.98	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.44	0.52	0.91	0.96	1.00	1.04
Max. Inrush Current (A peak)	30	30	30	30	30	30
Max. Inrush Current duration (mS)	3	3	3	3	3	3

Power Supply Specification - DC	Part number		433634-B21
	Spare Kit		419613-001
Operational Input Voltage Range (Vrms)	-36.0 to -72.0V DC		
Frequency Range (Nominal) (Hz)	DC		
Nominal Input Voltage (Vrms)	36	48	72
Max Rated Output Wattage Rating	1210	1210	1210
Nominal Input Current (A rms)	38	29	20
Max Rated Input Wattage Rating (Watts)	980	1035	1193
Max. Rated VA (Volt-Amp)	1368	1392	1440
Efficiency (%)	87.6	87.6	86
Max. Inrush Current (A peak)	60	60	60
Max. Inrush Current duration (mS)	100	100	100

NOTES:
- To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at url: http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls
To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: DL380 G5
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

System Unit	**Dimensions** (HxWxD) (with feet/bezel)	3.38 x 17.54 x 26.01 in (8.59 x 44.54 x 66.07 cm)	
	Weight (approximate)	Maximum	60 lb (27.22 kg)
		Minimum	47.18 lb (20.41 kg)
	Input Requirements (per power supply)	Rated Line Voltage	100-132 VAC, 200-240 VAC
		Rated Input Current	10A (100VAC), 10A (120VAC), 6.1A (200VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	1000/1056/1205 W
	BTU Rating	BTU/HR	3490/3680/4150
	Power Specifications	To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: http://h30099.www3.hp.com/configurator/powercalcs.asp. To drill down to calculators: - Click on: "ProLiant Servers" - Click on the Server of interest. Example: DL380 G5 - Click on: "Power Calculator" link. (You may need to scroll down to see it.)	
	Power Supply Output Power (per power supply)	Rated Steady-State Power	800/850/1000 W
		Maximum Peak Power	800/850/1000 W
	Temperature Range	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude de-rating of 1.8° F per 1000 ft (1.0° C per 304.8 m) to 10,000 ft (3048 m) no direct sunlight allowed. Maximum rate of change is 18° F/Hr (10° C/Hr). Upper operating limit is 10,000 ft (3,048 m) or 70 Kpa/10.1 psia. System performance may be reduced if operating with a fan fault or above 30° C.
		Non-operating	-22° to 140° F (-30° to 60° C) Maximum rate of change is36° F/Hr (20° C/Hr). Upper non-operating limit is 30,000 ft (9,144 m) or 30.3KPa/4.4 psia.
	Maximum Wet Bulb Temperature	101.7° F (38.7° C)	
	Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 28° C maximum wet bulb temperature.
		Non-operating	5% to 95% relative humidity (Rh), 38.7° C maximum wet bulb temperature.
	Acoustic Noise	Idle Minimum (Fixed Disk Drives Spinning)	
		L WAd (BELS)	6.1
		L pAm (dBA)	44
		Operating Minimum (Random Seeks to Fixed Disks)	
		L WAd (BELS)	6.1
		L pAm (dBA)	44

Smart Array P400 Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe provides 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 256MB cache (72-bit 512MB module upgrades available); ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical drives
	Maximum Logical Drive Capacity	3TB (6 x 500GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6 with ADG (Advanced Data Guarding) requires Battery Backed Write Cache Upgrade RAID 5 (Distributed Data Guarding) RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)

Two Embedded NC373i Multifunction Server Adapters	Network Interface	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	Two RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
		1000BaseTX	Category 5 or higher UTP; up to 328 ft (100 m)

NOTE: The NC373i Multifunction Gigabit Server Adapters support the installed Microsoft Windows Server 2003 Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features.

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.